

REMARKS

Claims 1-4, 7-15, 17-20, 22 and 24-26 are pending in the present application. Applicants gratefully acknowledge the allowance of claims 8-14, 20 and 25. Claims 1-4, 7, 15, 17-19, 22, 24 and 26 stand rejected. The Examiner's reconsideration of the claim rejections is respectfully requested in view of the following remarks.

Claims 1, 2, 7, 19, 22, 24 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hagersten et al. (U.S. Patent No. 5,864,671) (hereinafter "Hagersten") and Smith et al. (U.S. Patent No. 6,055,610) (hereinafter "Smith"). The rejection is respectfully traversed.

The Office Action argues that col. 9, lines 2-5 of Hagersten teaches "means for using the state information to allocate memory directory entries to the director cache," as claimed in claim 1. Col. 9, lines 2-5 of Hagersten state: "[T]he memory access request is serviced by consulting the directory cache entry to determine which node in the computer network currently possesses a first valid copy of the memory block." Nothing in the recited portion of Hagersten teaches "using the state information to *allocate memory directory entries* to the directory cache." Thus, assuming that Hagersten and Smith are properly combined, the combination does not teach "means for using the state information to allocate memory directory entries to the director cache," as claimed in claim 1."

The Office argues that Fig. 1 of Smith teaches a "at least one directory cache disposed within the functionality of a corresponding coherence controller," as claimed in claim 1. Fig. 1 of Smith shows a coherency controller CC and a directory cache FD located within a cell MC. In Fig. 1 of Smith, the coherency controller CC is separate from the directory cache FD. On the other hand, in Fig. 1 of the present invention, the directory

cache 170 is disposed within the functionality of the coherence controller 160. Thus, assuming that Hagersten and Smith are properly combined, the combination does not teach “at least one directory cache disposed within the functionality of a corresponding coherence controller,” as claimed in claim 1.

With regard to claim 19, the Office Action argues that col. 8, lines 61-63 of Hagersten teaches “receiving a signal at the directory cache in one node of the system indicative of a coherence request for a cached memory line from one of the other nodes of the system.” The recited portion of Hagersten states: “The method includes the step of receiving via the common network infrastructure at the home node from the first node a first memory access request for the memory.” The recited portion does not teach “indicative of a coherence request for a cached memory line from one of the other nodes of the system.”

The Office Action further argues that col. 9, lines 2-5 of Hagersten teaches “performing a memory directory lookup to determine the location of the directory entry of the cached memory line,” as claimed in claim 19. The cited portion of Hagersten states: “the memory access request is serviced by consulting *the directory cache entry* to determine which node in the computer network currently possesses a first valid copy of the memory block.” The recited portion of Hagersten does not disclose the step of “performing a memory directory lookup to determine the location of the directory entry.”

The Office Action further argues that col. 17, lines 53-62 of Hagersten teaches “storing information describing shared behavior of the cached memory line,” as claimed in claim 19. As noted by the Office Action, the cited portion of Hagersten teaches storing validity and state information. The recited portion of Hagersten does not teach “storing

information describing shared behavior of the cached memory line.” Figure 4 of the present invention illustrates the distinction between the current directory state 410 and the sharing history indicator 420.

Thus, assuming that Hagersten and Smith are properly combined, the combination does not teach “receiving a signal at the directory cache in one node of the system indicative of a coherence request for a cached memory line from one of the other nodes of the system,” “performing a memory directory lookup to determine the location of the directory entry of the cached memory line,” and “storing information describing shared behavior of the cached memory line,” as claimed in claim 19.

With regard to claim 22, the Office Action addresses claims 19 and 22 together, although claim 22 includes limitations not present in claim 19 and vice versa. Applicants submit that such a treatment of claim 22 is improper, as each and every claim limitation must be addressed. Nonetheless, Applicants submit that, assuming they are properly combined, the combination of Hagersten and Smith do not disclose “retrieving a memory directory entry from a memory directory,” “deciding whether to *allocate the memory directory entry* based on the state information of the memory directory entry,” and “wherein the *decision to allocate is based on sharing behavior information*,” as claimed in claim 22.

Accordingly, claims 1, 19 and 22 are believed to be patentably distinct and nonobvious over the combination of Hagersten and Smith. Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hagersten, Smith and Young et al (U.S. Patent No. 5,860,120) (hereinafter “Young”). Dependent claims 2-7, 24 and 26 are

believed to be allowable for at least the reasons given for claims 1, 19 and 22. Withdrawal of the rejection of claims 1-7, 19, 22, 24 and 26 is respectfully requested.

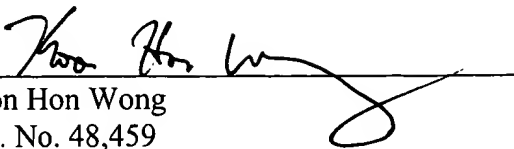
Claims 15, 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hagersten, Smith and Young. The rejection is respectfully traversed.

The Office Action argues that Fig. 1 of Smith teaches “at least one directory cache disposed within the functionality of the corresponding at least one coherence controller,” as claimed in claim 15. However, as addressed above, the directory cache FD and the coherency controller CC are separate components. The directory cache FD is not disposed within the functionality of the coherency controller CC. Thus, the combination of Hagersten, Smith and Young, assuming they are properly combined, do not teach or suggest “at least one directory cache disposed within the functionality of the corresponding at least one coherence controller,” as claimed in claim 15. Further, although not addressed by the Office Action, Applicants submit that the combination of Hagersten, Smith and Young, assuming they are properly combined, do not teach or suggest “means for using the state information to *allocate directory cache lines* to the directory cache,” as claimed in claim 15.

Accordingly, amended claim 15 is believed to be patentably distinct and nonobvious in view of Hagersten, Smith and Young. Dependent claims 17-18 are believed to be allowable for at least the reasons given for claim 15. Withdrawal of the rejection of claims 15 and 17-18 is respectfully requested..

In view of the foregoing remarks, it is respectfully submitted that all the claims now pending in the application are in condition for allowance. Early and favorable reconsideration is respectfully requested.

Respectfully submitted,

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